Diabetes and Motor Vehicle Safety

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Sponsored by

➢ Utah Department of Health

Diabetes Prevention & Control Program

➢ Utah Department of Public Safety

Driver License Medical Advisory Board

Important Definitions

- ***INSULIN*** **--** A hormone that allows glucose to enter body cells and be used for energy. Insulin is made by the beta cells of the pancreas and is released into the bloodstream when the glucose level rises.
- ***GLUCOSE*** **--** Glucose is the body's basic fuel. But it can't be used for energy until insulin lets it into your body's cells, except the cells of the nervous system (brain, etc.) which can take in glucose without insulin. And, if you don't have enough glucose or enough insulin, your body will burn fat instead of glucose to get its energy. Signs that a person with diabetes has begun to burn fat, not glucose blood, are thirst or dry mouth, frequent need to urinate, and glucose blood levels are very high (more than 240 mg/dL). That's not good—when fat is used for energy, it leaves behind ketones. Ketones enter the urine from the blood.

Important Definitions

- ***DIABETIC KETOACIDOSIS*** **--** High ketone levels lead to the serious condition called diabetic ketoacidosis. Ketoacidosis occurs most often in people with Type 1 diabetes—rarely in someone with Type 2. Causes include too little insulin, infection, high stress or trauma. **Warning signs are:** excess urination, nausea, vomiting, stomach pain, heavy breathing, weak, rapid pulse, flushed face, dehydration, very dry skin and mouth, confusion, fatigue and a fruity breath odor.
- ***HYPERGLYCEMIA*** **--** A blood glucose level that is too high. It occurs when the body does not have enough insulin or cannot use the insulin it has to enable glucose to enter cells. Over time, high levels of glucose in the blood can damage blood vessels, leading to many complications. Common symptoms of hyperglycemia include being very thirsty and having to urinate frequently.
- ***HYPOGLYCEMIA*** **--** An abnormally low blood glucose level. It occurs when insulin, food, and exercise are out of balance. Common symptoms include feeling weak, shaky, nervous, sweaty, confused, and hungry. Very severe hypoglycemia can lead to unconsciousness, seizures, and coma.

The Driver with Diabetes Is Responsible To Adhere To Strict Diabetes Regimen

- Drivers cannot neglect diabetes medications, but taking all the insulin or pills every day can be overwhelming. There are now a variety of drug and insulin options that can make dosing more convenient.
- Drivers with either Type 1 or Type 2 diabetes must strive to keep their blood glucose (sugar) levels near the normal range. Better glucose control reduces the risk for diabetes-related complications.

The Driver with Diabetes Is Responsible To Adhere To Strict Diabetes Regimen

- Along with proper diet, exercise, and blood pressure control, taking diabetes medications exactly as prescribed—*adhering* to the dosing regimen—goes far toward preventing complications. Studies show, however, that far too few people adhere to their regimens.
- Treatment plans for diabetes may be quite complex—daily insulin injections or pills, or both, along with blood glucose monitoring. Tracking carbohydrate intake isn't easy, either.

Daily Diabetes Care Managed By Diabetic Driver

- Research has revealed major barriers to diabetes control. Many people fear that they will take too much insulin or too many pills, which can lead to low blood sugar (hypoglycemia) or weight gain.
- To avoid these serious side effects, people sometimes take fewer doses than they are prescribed. Other individuals may take excess doses of their drugs in an attempt to prevent high blood sugar (hyperglycemia). **Both approaches are forms of non-adherence**.
- **The fact is, 99% of daily diabetes care is managed by the driver, not by the diabetes care team. Its success depends largely on the driver's understanding of and commitment to the blood glucose control regimen.**
- **Education, however, is critical!**

Type 1 and Type 2 Diabetes

- Current treatment for Type 1 diabetes calls for multiple injections of short-acting (bolus) insulin and long-acting (basal) insulin. For Type 2 diabetes, a combination of diabetes pills plus basal insulin injected once or twice a day is a common treatment regimen. Other individuals with Type 2 diabetes may achieve glucose on diet alone or with oral medications.
- Another bolus-basal approach is NPH. It is usually given in 2 doses each day, but 1 can be given. Insulin glargine and insulin detemir are long-acting analogs (man-made insulin preparations) that keep insulin levels steady over the course of 24 hours. . For example, studies have shown that once-daily glargine (Lantus) insulin can control blood glucose levels at least as well as NPH insulin administered once or twice daily.

Type 1 and Type 2 Diabetes

- The insulin pump, which delivers a continuous dose of insulin under the skin, is an alternative to injections of long-acting insulin.
- An effective type of medication now affords somewhat simpler treatment of Type 2 diabetes: Two diabetes drugs with different modes of action, for example metformin and glyburide, are packaged in a single pill, Glucovance. Metformin improves the cells' sensitivity to insulin, whereas glyburide stimulates the release of insulin from the pancreas.
- Amaryl (glimepiride) can also provide good glucose control with once-a-day dosing, as can Glucotrol (glipizide).

Diabetes Must Be In Constant Check

(Normal glucose range 60-100 mg/DL (3.3 to 5.6 mmol/L)

- DIABETES – Either you control it, or it controls you!
- Drivers with diabetes run a high risk of losing driving privileges or requiring restrictions placed on their driving privilege, if they will not take responsibility for their diabetes to avoid complications and to drive safely at all times.

Diabetes Must Be In Constant Check

- Typical warning signs associated with hypoglycemia:
  - trembling, tremors, sweating
  - anxiety, nausea
  - sudden episodes of dizziness or collapse
  - confusion
  - exhaustion
  - headaches, inability to concentrate
  - generalized weakness or debility
  - visual disturbances
  - NOTE: Severe hypoglycemia may cause loss of consciousness, seizures (convulsions), coma and even death.

Diabetes Must Be In Constant Check

- INDIVIDUALS SO AFFLICTED SHOULD NOT DRIVE A MOTOR VEHICLE UNTIL THESE SYMPTOMS HAVE BEEN CONTROLLED BY APPROPRIATE THERAPY.
- Health care professionals should report all of these types of complications and episodes.

Driver & Health Care Professional Must Determine & Maintain Effective Daily Diabetes Management

- People with diabetes have been involved in almost twice as many motor vehicle accidents as the non-diabetic driving population. Careful evaluation and medical management can increase their safety and the safety of our highways.
- Even people with diabetes whose glucoses are well controlled with insulin or oral hypoglycemic drugs may occasionally suffer a hypoglycemic episode.

Driver & Health Care Professional Must Determine & Maintain Effective Daily Diabetes Management

- It is important that the health care professional ascertain the cause of these occasional episodes and change the diabetes management of the patient.
- Before deciding the driver's diabetes condition is again stable enough for them to drive a motor vehicle, the health care professional should observe the patient under the new management program to be sure that it is effective.

"Hypoglycemic Unawareness"

- Certain insulin-requiring individuals with diabetes are much more likely than average to have altered consciousness from hypoglycemic episodes. These individuals have "hypoglycemic unawareness", which is a lack of symptoms to alert them of the likelihood of hypoglycemia, and the opportunity to treat the hypoglycemia with food intake to prevent the progression to severe hypoglycemia.
- The best predictor of whether or not a diabetic patient is likely to experience severe hypoglycemia, is a history of a recent episode of severe hypoglycemia (under any circumstances).

"Hypoglycemic Unawareness"

- A typical profile of such individuals includes previous episodes of hypoglycemia-induced unconsciousness, long duration diabetes and possibly autonomic neuropathy or beta blocker therapy.
- The health care professional should take these factors into account when profiling the medical condition on the Driver License Functional Ability Evaluation Medical Report in appropriate categories.

Health Care Professionals Must Educate Diabetic Drivers

- It is strongly recommended that health care professionals counsel drivers who are being treated with insulin or insulin-stimulating oral medications to carry in their vehicles at ALL times, a source of rapidly absorbed carbohydrate, and their glucose meters.
- Further, blood glucose monitoring just prior to driving is absolutely essential to maintain safety for any diabetic driver with a history of limited awareness of hypoglycemia.

Health Care Professionals Must Educate Diabetic Drivers

- Oral antidiabetic medications which are highly unlikely to lead to hypoglycemia (unless used in combination with insulin or sulonylurea) include Metformin, Alpha-Glucosidase inhibitors and insulin sensitizers (thiazolidenediones).
- Examples of rapidly absorbed carbohydrates are: juice, soda with sugar (not diet), hard candy, or glucose tablets

Profile Levels of Utah Drivers with Diabetes

- An applicant in Utah must have their health care professional complete a Functional Ability Evaluation Medical Report in Category A (and other categories as appropriate).
- The health care professional must profile the driver according to the 8 medical profile levels which are outlined on the next slide…

CATEGORY A: DIABETES MELLITUS AND OTHER METABOLIC CONDITIONS (PRIVATE)				
Profile Level	DIABETES MELLITUS	Medical Report Required	Interval For Review	License Class & Restrictions
1	No history of diabetes mellitus or elevated blood sugar. A history of elevated blood sugar, but no positive diagnosis of diabetes made.	No	N/A	Private Vehicle
2	Any diabetes stable on diet, adult onset diabetes stable on diet and/or oral agents which are non-insulin stimulating	Yes	1 Year	Private Vehicle
3	Diabetes stable on diet and insulin stimulating agents	Yes	1 Year	Private Vehicle
4	Stabilized Diabetes with INSULIN INJECTIONS with no episodes of ketosis or altered consciousness for one year	Yes	1 Year	Private Vehicle
5	Stabilized Diabetes with INSULIN INJECTIONS with no episodes of ketosis or altered consciousness for 6 months	Yes	1 Year	Private Vehicle
6	Stabilized Diabetes with INSULIN INJECTIONS with no episodes of ketosis or altered consciousness for 3 months	Yes	6 months	Private with health care recommendations
7	Special circumstances not listed above or under evaluation DRIVING RESTRICTIONS: Speed, Area, Daylight Only, and other restrictions as recommended by health care professional	Yes	As rec	Private Veh S.A.D.
8	Severe *UNSTABLE* insulin-dependent diabetes or persisting ketosis	Yes	N/A	*NO DRIVING*

Category A Profile Level 2

Non-Insulin Stimulating Medication & Diet

ORAL MEDICATION ONLY	GENERIC NAME
Glucophage	Metformin
Avandia	Rosiglitazone
Actos	Pioglitazone
Glyset	Miglitol
Precose	Acarbose
Avandamet	Rosiglitazone Metformin
Actosplus Metformin	Pioglitazone Metformin

Category A Profile Level 3

Insulin Stimulating Medication & Diet

ORAL MEDICATION ONLY	GENERIC NAME
Amaryl	Glimepiride
Dibeta Micronase Glynase	Glybruide
Glucovance	Glybruide Metformin
Diabinese	Chlorpropamide
Glucotrol	Glipizide
Metaglip	Glipizide Metformin
Prandin	Repaglinide
Starlix	Nateglinide
Tolinase	Tolazamide
Avandaryl	Glimepiride Rosiglitazone
Byetta (injection – not insulin)	Exenatide
Symlin (injection – not insulin)	Pramlintide

Category A Profile Level 4

INSULIN INJECTIONS

Lantus	Glargine
Levemir	Determir
Humulin U	Ultra-lente
Humulin L	Lente
Humulin N	NPH
Novolin N	NPH
Humalog	Lispro
Novalog	Aspart
Apidra	Glulysine
Humalog Mix 75/25 and 50/50	NPH Insulin lispro
Humulin 70/30	NPH / Regular
Novolin 70/30	NPH / Regular
Novolog Mix 70/30	NPH Insulin Aspart
Humulin R	Regular
Exubera	Inhaled Insulin

Diabetic Retinopathy

- Several factors influence whether diabetics will develop retinopathy. These include the patient's blood sugar control, blood pressure levels, how long they have had diabetes, and family history. The longer your patient has had diabetes, the more likely they are to have retinopathy. But the retinopathy that destroys vision, proliferative retinopathy is far less common.
- Good blood glucose control is essential.
- The sooner retinopathy is diagnosed, the more likely treatments will be successful. The best results occur when sight is still normal.

Diabetic Retinopathy

VISION GUIDELINES

UTAH'S CERTIFICATE OF VISUAL EXAMINATION PROFILE LEVELS

Vision Profile Levels – Regular Operator Only (summary)

1 – 20/40 or better in each eye Monocular 120° in each eye Bin VF 70° to R/L
2 – 20/40 or better in better eye Monocular 120° in each eye Bin VF 60° to R/L
3 – 20/40 or better in better eye Bin VF at least 120° total 60° to R/L
4 – 20/40 or better in better eye Bin VF at least 90° total 45° to R/L
5 – 20/50 tp 20/70 in better eye Bin VF at least 90° total 45° to R/L – **Speed Restriction Required for Level 5 (speeds less than 40 mph or less)**
6 – 20/80 to 20/100 in better eye Bin VF at least 60° total 30° to R/L – MAB Required ** **Must successfully pass driving skills test; add speed, area radius, daylight only restrictions to license and other restrictions as determined by DL Examiner**
7 – Special circumstances not covered by any of the above Bin VF 60° 30° R/L -- MAB
8 – 20/40 or better in better Bin VF at least 60° total 30° to right – MAB Required
9 – 20/40 or better in better eye Bin VF at least 60° total 30° to left – MAB Required
10 – 20/200 or worse Binocular VF less than 60° **NO DRIVING**

Driver License Functional Ability Evaluation Medical Report and/or Certificate of Visual Examination Report

A driver must be medically qualified to drive a motor vehicle according to Utah's Medical Guidelines.

When an applicant wants to obtain or renew a Utah driving privilege, they must complete a Driver License Application, i.e., first-time license, or renewal, or duplicate. The applicant must answer "Yes" or "No" to all (thirteen) 13 questions on the Medical Questionnaire.

These medical questions include the following medical categories:

A. Diabetes; B. Cardiovascular; C. Pulmonary; D. Neurologic; E. Epilepsy or Seizures; F. Learning & Memory; G. Psychiatric; H. Alcohol/Drugs; I. Visual Acuity; J. Musculoskeletal and Chronic Debilities; K. Alertness & Sleep Disorders; L. Hearing & Balance; Other health problems or use of medications which might interfere with driving ability or safety.

Driver License Functional Ability Evaluation Medical Report and/or Certificate of Visual Examination Report

- If the applicant answers "YES" to one or more of the above categories, and there are NO previous medical reports on the driving history in the specified category, the applicant will be required to sign & date and have their health care professional sign, date & complete profile levels on the Driver License Functional Ability Evaluation Medical Report and/or Driver License Certificate of Visual Examination Report which must be filed with the Driver License Division to avoid the DENIAL of driving privileges.
- *IMPORTANT NOTICE*: Once a medical profile level in one or more categories has been reported to the Driver License Division Medical Section, the medical categories will be continued to be tracked on the driver's history by the Driver License Division. This requires the driver to file a Medical Report (i.e., yearly for Diabetes) according to the specified interval for review associated with the medical category, and also depending upon the profile level, to maintain a VALID driving privilege in Utah.

Diabetes Driver Licensing Questions

Are applicants for a driver's license asked questions about diabetes?

Yes. The Utah Driver License Application (first time and renewals and duplicates) presents a list of medical conditions (one of which is diabetes) and asks the applicant whether he or she has any of these medical conditions. Applicants who answer "Yes" to these questions must have a medical evaluation form and/or visual examination completed by their health care professional.

Diabetes Driver Licensing Questions

What other ways does Utah have to find out about people who may not be able to drive safely because of medical or visual conditions?

- The state accepts reports of potentially unsafe drivers from: all law enforcement agencies; police officers, the courts, physicians, family members, friends, other citizens, health care professionals and hospitals. Utah does not accept anonymous reports, and does not investigate reports before the driver is required to go through the medical/visual evaluation process.
- Drivers may also be required to have a medical/visual evaluation if they have impairments which are observed by licensing agency personnel during the licensing process, when they contribute to an accident that results in a fatality, or after accumulating a given number of crashes within a certain time period.

Medical & Visual Evaluations of Utah Drivers

What is the process for medical evaluations of drivers?

- When the Utah Driver License Division learns that a driver has diabetes, it will require the individual to have a medical and/or visual evaluation.
- When this happens, an evaluation form(s) is sent to the individual, which must be completed by the driver's health care professional. On the Functional Ability Evaluation Medical Report form and/or Certificate of Visual Examination, the health care professional indicates a profile level of the patient's functional ability to drive (medical & vision) as it is impacted by diabetes (and other medical conditions).
- Functional Ability Evaluation Medical Reports and/or Certificate of Visual Examinations are completed by driver & health care professionals after being signed, dated. Then, the medical and visual reports are returned to the Driver License Division Medical Section for review and a licensing decision.

Medical & Visual Evaluations of Utah Drivers

Who makes decisions about whether drivers are medically qualified?

Medical Reports and Visual Reports are evaluated by non-medical licensing agency personnel who make decisions based primarily on information provided by the health care professional and the profiled category level of the driver's functional ability. Depending on the health care professional's recommendation, some cases may be referred to the Utah Driver License Medical Advisory Board for a recommendation.

Utah's Diabetes Licensing Policies

Has Utah adopted specific policies about whether people with diabetes are allowed to drive?

Yes. Utah requires that diabetes be controlled with insulin, oral medication, diet or exercise to permit driving. All applicants with diabetes must submit a medical evaluation and regular follow-up evaluations. The frequency of follow-up evaluations is based on the stability and severity of the condition.

Individuals who control their diabetes without insulin, or who use insulin but have had no episodes of ketosis or altered consciousness for one year, must have follow-up medical evaluations every year. Individuals who use insulin and have had episodes of loss of consciousness more than three months ago but less than one year ago must have a follow-up evaluation in six months, and may only drive with their physician's recommendation.

Utah's Diabetes Licensing Policies

What are Utah's Medical Guidelines about episodes of altered consciousness or loss of consciousness that may be due to diabetes?

No specific episode-free time period is required by Utah; however, instructions given to health care professionals filling out medical evaluation forms suggest that individuals who have had an episode of altered consciousness due to diabetes, within the last three months, should not be licensed unless special circumstances are present.

Driver License Appeal Process

What is the process for appealing a decision of the state regarding a driver's license?

The individual may, within ten days of receiving notice of the action, request in writing a review of the division's action by a panel of the Driver License Medical Advisory Board. The panel will review medical reports and medical records released by the driver and health care professional, review the driving record, and provide written finding and conclusions to the licensing agency.

Driver License Appeal Process

May an individual whose license is DENIED because of diabetes receive a probationary or restricted license? Their driving privilege would be determined by the profile level on the completed Functional Ability Evaluation Medical Report and/or Certificate of Visual Examination. A profile level 8 (medical) in Category A would deny privileges. A profile level 7 (medical report) could possibly maintain driving privileges with restrictions such as speed, area radius, and daylight only, accompanied by licensed driver.

The driver may be required to successfully complete a driving skills test, either requested by the health care professional or required to pass by the Driver License Division. A profile level 10 (visual report) denies driving privileges. A health care provider, when completing the Medical Report and/or Visual Report, may recommend the driver pass a driving skills test any time they determine it should be necessary, regardless of the profile level(s) on the vision exam or in any category on the medical report.

Is a Utah Identification Card available for non-drivers? Yes, with proper identification and payment of a fee. If a driver loses their Utah driving privilege due to a medical condition, they may receive a free ID Card by surrendering their driver license.

Educating Patients on How Diabetes Can Affect Driving Safety

- In the short term, diabetes can make your blood glucose (sugar) levels too high or too low. As a result, diabetes can make you: feel sleepy or dizzy, feel confused, have blurred vision, lose consciousness or have a seizure.
- In the long run, diabetes can lead to problems that affect driving. Diabetes may cause nerve damage in your hands, legs and feet, or cause diabetic eye diseases. In some cases, diabetes can cause blindness or lead to amputation.

Counsel Drivers To Ensure They Can Drive Safely with Diabetes

1. Insulin and some oral medications can cause blood glucose levels to become dangerously low (hypoglycemia). Do not drive if your blood glucose level is too low. If you do, you might not be able to make good choices, focus on your driving or control your car.
2. Make sure you always carry your blood glucose meter and plenty of snacks (including a quick-acting source of glucose) with you. Pull over as soon as you feel any of the signs of a low blood glucose level to check your blood glucose as soon as it is safe to do so.

Counsel Drivers To Ensure They Can Drive Safely with Diabetes

3. If your glucose level is low, eat a snack that contains a fast-acting sugar such as juice, soda with sugar (not diet), hard candy, or glucose tablets. Wait 15 minutes, and then check your blood glucose again. Treat again as needed. Do not continue driving until your blood glucose level has improved.

4. Most people with diabetes experience warning signs of a low blood glucose level. However, if you experience hypoglycemia without advance warning, you should not drive. Talk to your health care team about how glycemic awareness training might help you sense the beginning stages of hypoglycemia.

Counsel Drivers To Ensure They Can Drive Safely with Diabetes

5. In extreme situations, high blood glucose levels (hyperglycemia) also may affect driving. Talk to your health care team if you have a history of very high glucose levels to determine at what point such levels might affect your ability to be a safe driver.

6. The key to preventing diabetes-related eye problems is good control of blood glucose levels, good blood pressure control and good eye care. A yearly exam with an eye care professional is essential.

Counsel Drivers To Ensure They Can Drive Safely with Diabetes

7. If you are experiencing long-term complications of diabetes such as vision or sensation problems, or if you have had an amputation, your diabetes health care team can refer you to a driving specialist.

8. Improving your driving skills could help keep you and others around you safe. To find a specialist near you, call the Association of Driver Rehabilitation Specialists at 1-800-290-2344 or go to their website at www.aded.net. You also can call hospitals and rehabilitation facilities to find an occupational therapist who can help with the driving skills assessment.

Commercial Drivers Intrastate vs. Interstate

Category A -- Diabetes Mellitus

DOT Medical Card Denied – INSULIN INJECTIONS

UTAH "K" RESTRICTION REQUIRED – INTRASTATE ONLY

- A-04 Stabilized diabetes with insulin – no episodes of ketosis or altered consciousness for one year (yearly rev)
- A-05 Stabilized diabetes with insulin – no episodes of ketosis or altered consciousness for six months (yearly rev)
- Profiled lower: *COMMERCIAL PRIVILEGE "DENIED"*

GREAT NEWS FOR DIABETICS TAKING INSULIN FROM FMCSA!

Required For Commercial Diabetic Drivers Intrastate Only "K" Restriction

Patient underwent a complete medical evaluation by a health care professional who assessed the results of the following procedures prior to determining whether the person is qualified to operate a commercial motor vehicle.

At least two results of glycolysated hemoglobins (Hb A1C) during the last 6 months:

- **A lipid profile, urinalysis and CBC**
- **Blood pressure readings at rest, sitting and standing**
- **Elevated blood pressure, medication for hypertension or other evidence of any cardiovascular abnormality will require a maximal exercise stress EKG**
- **Ophthalmologic confirmation of absence of visually significant retinal disease**

Required For Commercial Diabetic Drivers Intrastate Only "K" Restriction

- **Examination and tests to detect peripheral neuropathy and/or circulatory deficiencies of the extremities**
- **A detailed evaluation of insulin dosages and types, diet utilized for control and any significant lifestyle factors, such as smoking, alcohol use and other medications or drugs taken**
- **The health care professional certifies that the driver has been educated in diabetes and its control and thoroughly informed of and has demonstrated the understanding of the procedures which must be followed to monitor and manage their diabetes and what actions should be followed if complications arise**
- **The health care professional ascertains that the driver has the ability, willingness, and equipment to properly monitor and manage their diabetes**
- **A blood glucose monitor with electronic "memory" is required**

FMCSA - INTERSTATE

Federal Motor Carrier Safety Administration

Effective 11-8-2005, applications for Federal Diabetes Waivers will no longer be denied because the drivers do not have three (3) years of experience operating commercial motor vehicle while using insulin. To apply for a Federal Diabetes Waiver please call the following telephone number to order your Federal Diabetes Waiver Packet:

FMCSA FEDERAL DIABETES PROGRAM
400 SEVENTH STREET, SW, RM 8301
WASHINGTON DC 20590
TEL: 703-448-3094
FAX: 703-448-3077

NOTE: ALLOW AT LEAST THREE TO FIVE MONTHS TO COMPLETE

RESOURCES

American Diabetes Association
www.diabetes.org
Federal Motor Carrier Safety Administration
www.fmcsa.dot.gov.rulesregs/medreports
Utah Department of Public Safety
Driver License Division
www.driverlicense.utah.gov